ATOMIC ENERGY Letter

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Dear Sir:

The AIEE-IRE "Conference on Electronic Instrumentation in Nucleonics and Medicine" (Oct. 23-25, Park Sheraton Hotel, New York City), will have a wide range of papers presented. "External Localization of Brain Tumors with Radio-active Di-iodo-fluorescein", by T. Fields, et al., Veterans Hospital, Hines, Ill.; "Isotopes as Used to Measure Body Fluids", by J. L. Nickerson, Columbia University, N.Y.; "Instrumentation for Health Physics", by H. M. Parker, General Electric Co., Hanford, Washington; and "New Medical Applications of Tracers", by A. H. Holland, Armour Research Foundation, Chicago, Ill., will be some of the papers to be heard during the session devoted to the medical aspects of nucleonics. Nucleonics in industry will be covered by such papers as: "Manufacture and Quality Control of G-M Tubes", by D. Atchley, Tracerlab, Boston, Mass.; D. L. Collins, Victoreen Instrument Co., Cleveland, O., and J. A. Schoke, Nuclear Instrument & Chemical Corp., Chicago, Ill.; "Boron Lined Neutron Counters", by W. W. Schultz, and R. M. Lichtenstein, General Electric Co., Schenectady, N.Y.; "Design of a Commercial Scintillation Counter", by W. S. Macdonald, and E. W. Jervis, Jr., of W. S. Macdonald Co., Cambridge, Mass.; and "Testing Photomultipliers for Scintillation Counting", by R. W. Engstrom, of RCA Laboratories, Princeton, N. J. Additionally, government nucleonic development, as well as a round table discussion (W. R. G. Baker, Chairman), on "Effects of Atomic Weapons" will feature this Conference. Exhibits by nuclear instrument manufacturers will be the largest specialized showing of such instruments, and components, held to date. All papers presented will be published in the "Conference Proceedings", to be deliverd within six months.

The existence of tritium (hydrogen-3) in heavy water was announced in Philadelphia last week by Willard F. Libby, University of Chicago, and A. V. Grosse, Temple University. Source of the tritium is the action of cosmic rays in the upper atmosphere. The tritium is carried to the earth's surface by rain, and collects in bodies of water; the amount of tritium is extremely minute. Enriched heavy water from Norway was used to make the first determinations of the tritium, since by increasing the concentration of heavy water, the tritium content was raised by an even higher factor.

A Federal "master plan" for organizing civil defense against air and atomic attack, throughout the U.S., was submitted by President Truman to Congress last week. Prepared by the Civilian Mobilization Office of the National Security Resources Board, the plan provides that operation of the civil defense system would start at the State government level. Although Federal Regional Offices would be set up to maintain close cooperation with the State agencies, the Federal agency would have no authority over any funds, facilities, materials, and grants that Congress might authorize it to give to the States.

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.

ATOMIC ENERGY REGULATIONS...important changes...

A proposed amendment of the Code of Federal Regulations will have the effect of placing under Government control, so far as export from the U.S. is concerned, certain additional nuclear and related instruments. These instruments will be added to Section 50.71, Title 10, Chapter I, Part 50, of the Code, entitled "Control of Facilities for the Production of Fissionable Material". Instruments under this section are those considered important component parts especially designed for equipment or devices capable of production of fissionable material, and while general license is granted for their manufacture and domestic sale in the United States, exporting them now requires license and filing of necessary documents. Seven categories are effected, under section 50.71:

(1) Electrometer tube circuits and dynamic condenser electrometers--vibrating reed, vibrating diaphragm, etc.--capable of measuring currents of less than one micromicroampere. (Replacing the previous listing of "micromicroammeters capable of measuring currents of less than one micromicroampere", under a-7 of this section.)

(2) Amplifiers designed for application in nuclear measurements, including linear amplifiers, pre amplifiers, and distributed or chain amplifiers. (Replacing the previous listing of "high gain, high impedance, linear pulse amplifiers", under a-9 of this section.)

(3) Dosimeters and electrometers, pocket and survey types, including electroscopes incorporating radiation measurement scales. (Replacing the previous listing of "electroscopes and electrometers, pocket and survey types, including dosimeters", under a-12 of this section.)

(4) Electrometer tubes designed to operate with grid currents of less than 0.1 micromicroampere. (Replacing the previous listing of "electrometer-type electronic tubes with input grid currents of less than 1.0 micromicroampere, such as FP-54, etc.", under a-14 of this section.

(5) Same as (4) above, both in new and previous listing, under b-7 of this section.

(6) Scintillation counters, incorporating a photomultiplier tube, now added under a-16 of this section.

(7) Photomultiplier tubes having photocathodic sensitivity of 10 or more microamperes per lumen, and an average amplification greater than 100,000, now added under a-17 of this section.

Comments from persons interested in this proposed amendment should be made to the AEC in writing, before October 15, 1950. They should be sent to Walter J. Williams, the AEC's acting general manager.

AT THE ATOMIC CITIES & CENTERS IN THE UNITED STATES...

OAK RIDGE, Tennessee- Courses in the techniques of using radioisotopes in research will continue to be given here by the Oak Ridge Institute of Nuclear Studies during the Winter and Spring of 1951. Dates set are Jan. 8-Feb. 2; Feb. 19-Mar. 16; and Apr. 16-May 11. Designed to acquaint research workers with the safe and efficient use of radioisotopes in research, the course consists of laboratory work, lectures on laboratory experiments, general background lectures, and special topic seminars. Additional information may be obtained from the Institute, at P. O. Box 117, Oak Ridge, Tenn.

ARCO, Idaho- Electrical power for the nuclear reactors, the chemical processing plant, and associated facilities (which are under construction here at this reactor test station), will be furnished by the Utah Power and Light Co., and the Idaho Power Co., under a long term contract recently negotiated with these firms by the AEC. Under the contract, Utah Power will erect a 132-kilovolt line from a sub-station near Firth, Idaho, with the AEC paying one-half of the $562,000.00 cost of the line. At the end of 10 years, the AEC will be reimbursed by Utah for one-half of its expenditure. Provision is made for "possible additional payments after that time". Power to meet a load of 20,000-kilowatts will be furnished by Utah Power and Idaho Power, under this contract. (Ten miles of 138-kilovolt transmission line will be erected at this station by Robert B. Swaner, Salt Lake City. His proposal-- the lowest of 8 recent bids submitted--was $79,040.00 for aluminum-type conductors.)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS- New model of its portable uranium prospecting instrument, now called "Super Sniffer". Incorporates improved circuit; uses stainless steel Geiger counter (inside housing of device). Sensitive to both beta and gamma radiation; beta window permits greater sensitivity. Disintegrations indicated by both flashing neon blinker, and double headphones. Weight: 2-lbs.....Model 1616 "Ore Caster" for semi-quantitative assay work on radioactive ores. Consists of cylinder, one end of which is closed, mounted on stand, with open end up. Geiger counter, in center of cylinder, is covered with paper tube. Ore is packed into cylinder, surrounding Geiger counter. Complete apparatus comprises this testing cylinder, with Geiger counter, and electronic circuit and meter.-- Nuclear Instrument & Chemical Corp., Chicago, Ill.

New Kodak nuclear track emulsion, experimental type NTC-3; available both as pellicles and on plates. Less sensitive than type NTA, the new emulsion is recommended by the manufacturer for cyclotron and synchrotron applications where the high intensity of background radiation is a serious problem. Low halide-to-gelatin ratio in NTC-3 emulsion facilitates grain counting for protons below 10 Mev, and alpha particles below 100 Mev. -- Eastman Kodak Co., Industrial Photographic Div., Rochester 4, N.Y.

Special solution "Radiacwash" for cleaning surfaces contaminated by radioactivity. Said to act as combination detergent, emulsifier, solvent, ion-extractor, surface wetter, carrier, etc. Does not neutralize radioactivity or the physiological effects of radiation, but assists in "lifting-up" contamination prior to penetration. Said to reduce contamination more rapidly and from 2 to 30 times lower than levels obtained by washing with other commonly used solutions. -- Atomlab, 489 Fifth Ave., New York 17, N.Y.

Model 389 "Thyac" beta-gamma survey instrument. Covers three ranges of gamma radiation intensity: 0.2-2.0-20.0 mr/hr. Said by manufacturer to be completely waterproof; weight, 5½-lbs.-- Victoreen Instrument Co., Cleveland 3, Ohio.

NEWS & NOTES- Radioactive Products, Inc., Detroit, recently announced receipt of two new contracts upon which it is now engaged. One contract is from Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corp., operators of the National Laboratory, and the gaseous diffusion U-235 production plants, at Oak Ridge, Tenn. Under this contract, Radioactive Products will furnish instruments with an electronic scale of 64 driving a Wizard, 4-digit, reset register, a shunt regulated Geiger tube voltage supply variable from 500 to 1500-volts, Higginbotham-type scaling circuits, hermetically sealed transformer, etc. The Company plans to make these instruments generally available upon completion of the contract. The other contract Radioactive received was from Dow Chemical Company, for a research and development project in the field of applied radioactivity.

The British firm, Nucleonic & Radiological Developments, Ltd., Baltic House, Leadenhall St., London, E.C.3, have recently purchased from Alltools, Ltd., Brentford, Middlesex, all the equipment, patents, developments, etc., of their research department dealing with Geiger counter, proportional counter, and scintillation counter tubes, and the associated electronic equipment including amplifiers, and scalers, as well as the Hills' X-Ray Autotimer. The personnel of Alltools research department have also been engaged by the Nucleonic firm.

MANUFACTURERS' CATALOGUES- Sixteen page catalogue of material for industrial gamma radiography, with radium or highly radioactive artificially prepared sources.-- Eastman Kodak Co., X-Ray Division, 343 State St., Rochester, 4, N. Y.

Catalogue showing products for use in the field of radioactivity measurement and detection. Includes ionization chambers, various radiation detectors, power supplies, etc. -- Special Products Div., Apparatus Department, General Electric Co., Schenectady 5, N.Y.

ATOMIC PATENT DIGEST...latest U. S.&British applications&grants...

NOW RELEASED TO INDUSTRY GENERALLY are 23 U. S. patents and 4 applications, developed in activities connected with atomic energy work. Royalty-free (but non-exclusive) licenses will be granted on these U.S. Government-owned patents and applications, which are held by the USAEC. Applications for such licenses should be made to the Chief, Patent Branch, USAEC, Washington 25, D.C. This latest group brings to 165 the total of such patents and applications open to royalty free license. It comprises: (1) Device for detecting radioactivity by fluorescence; Pat. No. 2,513,805. (2) Using tetravalent zirconium nitrate for dissolving difficulty soluble metal sulfates; Pat. No. 2,514,115. (3) Operating on the interior of a cylindrical tube by moving a tool in a magnetic field; Pat. No. 2,514,116. (4) Radiation detection, with an audible note distinguishing the intensity and frequency of the radiation; Pat. No. 2,514,135. (5) Hydraulically driven scrubbing brush; Pat. No. 2,514,142. (6) Disposing of waste gas containing elemental fluorine; Pat. No. 2,515,112. (7) Quick operating large valve; Pat. No. 2,515,159. (8) Adjustable centrifugal switch; Pat. No. 2,516,050. (9) Measuring high intensity alpha particle radiation; Pat. No. 2,517,469. (10) Pulse forming preamplifier; Pat. No. 2,517,676. (11) Voltage supply circuit for vacuum tubes; Pat. No. 2,517,863. (12) Tensile strength testing apparatus, with maintenance of uniform temperature during stressing; Pat. No. 2,518,217. (13) Fast neutron counter; Pat. No. 2,519,007. (14) Manufacturing chloranil, or tetrachloroquinone; Pat. No. 2,519,319. (15) Measuring eroding effect of fluid on solid material; Pat. No. 2,519,323. (16) Electrolytic production of metallic uranium; Pat. No. 2,519,792. (17) Separating fluids by thermal diffusion; Pat. No. 2,521,112. (18) Separating phases of a liquid dispersion; Pat. No. 2,521,121. (19) Secondary electron multipliers; Pat. No. 2,521,133. (20) Producing carbonaceous articles; Pat. No. 2,521,495. (21) Fluorinating a petroleum lubricating oil fraction boiling above 300° C.; Pat. 2,521,626. (22) Acoustic chamber to determine effective molecular weight of a gaseous mixture, Pat. No. 2,521,634. (23) Ionization chamber; Pat. No. 2,521,656. (24) Purifying hydrogen with uranium metal; Appl. No. 594,587. (25) Coincidence proportional counter; Appl. No. 634,861. (26) Detecting and counting neutrons, particularly those liberated in an alpha, neutron reaction; Appl. No. 634,862. (27) Remotely-controlled precipitation and filtration apparatus; Appl. No. 664,957.

NEW U. S. PATENTS ISSUED- Valve for controlling flow to and from a rotating member through a port whose axis is coincident with the rotational axis of the member. Comprises a closure and a resilient diaphragm cemented to it. The diaphragm is flexed by operation of the closure, while its construction is such that the closure is biased and positively held thereby in both its closed and open positions. U. S. Pat. No. 2,521,891, issued Sept. 12, 1950; assigned to United States of America (USAEC).

Method of purifying an inert gas which contains a hydrogen non-metal compound. Comprises heating the gas with uranium at a temperature sufficiently high to form a compound of uranium and the non-metal, and further heating the gas with uranium at a lower temperature to form uranium hydride. U. S. Pat. No. 2,521,937, issued Sept. 12, 1950; assigned to U. S. of America (USAEC).

APPLICATIONS FOR U. S. PATENTS - Manufacture of pressure vessels and the like. Comprises a method of assembling and securing thin tubing of heat-conducting material, such as copper, to a thick carbon steel plate. Appl. No. 652,830; assigned to United States of America (USEAC).

Fluorination process. An organic compound having one or more chlorine, bromine, or iodine atoms attached to an aliphatic carbon atom is reacted with a complex of KF and HF containing from 5 to 8 mols of HF for each mol of KF in order to replace the chlorine, bromine, or iodine atoms with fluorine atoms. Appl. No. 779, 219; assigned to the United States of America (USAEC).

RAW MATERIALS...radioactive ores & other essentials for nuclear work...

UNITED STATES - Montana- Radioactive ore has been located on the property of Golden Anchor Mining and Milling, near Elliston, according to a director of that company. Golden Anchor was organized last Fall; offices are in Spokane, Wash.

Colorado - Five claims have been filed (at Pagosa Springs) on a radioactive ore find in the Blanco Basin, one mile west of the Blanco River, in Oil Creek Canyon. It is the first such strike made in this area. First estimates placed the uranium oxide content at 1.4%...Underground exploration work in the Consolidated Caribou Silver Mines is now proceeding under AEC-sponsorship. The recent $17,000.00 contract which Consolidated received from the AEC provides that the government agency will handle any further uranium exploration work in the Company's Caribou Mine in the Colorado Front Range near Nederland, Colo. Consolidated had recently notified the AEC that, after having spent "substantial sums" in exploration work in the mine, since 1948 when uranium minerals were first discovered there, it was about to suspend its own operations on uranium. Work under this contract is to be completed by November 30th, of this year.

GREAT BRITAIN - The largest deposits of uranium-bearing ore so far discovered in Britain have been found near the surface at Dogelly, N. Wales, by a Geological Survey team. The Department of Scientific and Industrial Research (DSIR) said these black-band shales of N. Wales may carry possibly a million tons of uranium in submarginal grade rocks, showing 80 grams per ton. Since the minimum normal economic grade is at least 150 grams per ton, it would not be economical to normally work this very low-grade ore. A Ministry of Supply official said, however, that these N. Wales deposits were "in no way inferior" to those now being worked by the Russians in Germany.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear energy field...

Tables of Nuclear Data. (To be followed by supplements of new material at six-month intervals.) Compiled by National Bureau of Standards, with assistance of National Laboratories at Oak Ridge and Brookhaven; the University of California Radiation Laboratory; and Massachusetts Institute of Technology. For the reactor engineer, the industrial or medical user of radioactive materials, and the nuclear physicist, this work provides a listing of available data which can automatically be kept up-to-date. (Now, over 1,000 new measurements of different nuclear properties are being reported each year in some 30 different journals, and in the reports of dozens of different laboratories.) Initial volume of the tables, together with the supplements, will present a collection of experimental values of half-lives, radiation energies, relative isotopic abundances, nuclear moments, and cross sections. 310 pages, (Official designation· Circular 499.) -- Superintendent of Documents, Washington 25, D.C. ($4.25. This price includes the three supplements of approximately 60 pages each which will be issued at six-month intervals.)

Atomic Machines, by Maurice E. Nahmias. The cyclotron and other accelerators; nuclear reactors. A revision and extension of the author's work of 1945, "The Cyclotron". 310 pages. 28 illus. (In French.) Editions de la Revue d' optique theorique et instrumentale. Paris, France. (1200 francs.)

Principles of Plant Protection. A booklet for industrial guidance, prepared by the Munitions Board. Advises on protective construction, setting up disaster-control measures. etc. --Superintendent of Documents, Washington 25, D.C. (15¢)

Atomic Attack· A Manual for Survival, by John L. Balderston, Jr., and Gordon Hewes. Practical and usable guide for protection from hazards of atomic warfare. The first such guidebook, for the lay public, to be issued in the United States. Does not assume any prior knowledge of atomic or other warfare, on the part of the reader. Popular style, and simple language. --Murray & Gee, Inc., 3630 Eastham Drive, Culver City, Calif. ($1.00)

Sincerely,

The Staff,
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